Centrifugal sintering of layered ceramics

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Abstract

Centrifugal sintering is an advanced technology that is specifically designed to sinter structures under constrained conditions, such as films on substrates and multi-layered ceramics. This technology consists of loading high centrifugal acceleration more than 100 km/s^2 onto specimens and heating. Owing to the distinctive pressing measure, pressing without molds, and anisotropic shrinkage during sintering are achieved. This process has been found to be a successful strategy for eliminating shrinkage mismatches in multi-layered ceramics, leading to a crack-free homogeneous microstructure. This distinctive feature of centrifugal sintering arises from anisotropic shrinkage that is caused by chief densification progress along the radius of rotation.

Keywords: Sintering; Interface; Fracture; Functional Applications